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Date: April 13, 2009	From: I. William Millen **MILLEN, WHITE, ZELANO & BRANIGAN, P.C.** **Arlington Courthouse Plaza I** **2200 Clarendon Blvd., Suite 1400** **Arlington, VA 22201 (U.S.A.)** **(Fax: 703-243-6410)**
To: Examiner In Suk C Bullock U.S. Patent and Trademark Office Group Art Unit 1797	
Facsimile No.: (571) 273-8300	Writer's Direct Dial: (703) 812-5325
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Re: U.S. Application No. 10/519,355 Filed: December 19, 2005 Confirmation No.: 2996	

Total No. of Pages: 7; if you do not receive all pages, please call (703) 243-6333

Examiner Bullock:

Attached is a Pre-Appeal Brief Request for Review, along with Notice of Appeal and Form PTO/SB/33.

Respectfully submitted,

I. William Millen,
Reg. No. 19,544

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Doc Code: AP.PRE.REQ

PTO/SB/33 (01-09)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)
PET-2170

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on _____

Signature _____

Typed or printed name _____

Application Number	Filed
10/519,355	December 19, 2005

First Named Inventor
Gerard HILLION

Art Unit	Examiner
1797	In Suk C Bullock

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

☑ attorney or agent of record. Registration number 19,544

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

Signature

I. William Millen
Typed or printed name

(703) 243-6333
Telephone number

April 13, 2009
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.
Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Gerard Hillion et al. Examiner: In Suk C. Bullock

Serial No.: 10/519,355 Group Art Unit: 1797

Filed: December 19, 2005 Confirmation No.: 2996

Title: PROCESS FOR THE SELECTIVE HYDROGENATION OF POLYUNSATURATED COMPOUNDS TO MONOUNSATURATED COMPOUNDS USING A HOMOGENEOUS CATALYST

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In brief, Appellants invention is directed to the hydrogenation of 1,3-butadiene by contacting it with a liquid catalyst composition so as to result in a conversion of the 1,3-butadiene to primarily cis-2-butene, a desired starting monomer in the petrochemical industry. Claim 28 requires the selectivity to cis-2-butene to be over 98% for an 80% 1,3-butadiene conversion.

Both claim 1 and claim 24 are rejected on the grounds of anticipation under 35 U.S.C. 102(b) in view of U.S. Patent 3,917,737 to Yoo.

Clear error of the rejection of claims 1-9, 12, 24 and 25 as being anticipation by Yoo.

In the Yoo reference, there is neither a disclosure of appellants starting material 1,3-butadiene nor the product produced which is primarily cis-2-butene. Instead, the feeds

contemplated by Yoo are set forth on column 8 starting at line 56 through column 9, line 11. On page 3, first complete paragraph of the Final Rejection, it is stated that the diolefin compound having 2 to 30 carbon atoms disclosed by Yoo includes the claimed 1,3-butadiene. It is well settled that a generic statement does not provide sufficient information to anticipate a species, with exceptions being in such cases as *In re Petering, 301 F.2d 676, 133 U.S.P.Q. 275 (CCPA 1962)* and *In re Schauman, 572 F.2d 312, 197 U.S.P.Q. 5 (CCPA 1978)*. Such exceptions elucidated in the two mentioned decisions do not support a rejection predicated on anticipation with respect to a single species coming within the expression 2 to 30 carbon atoms. A further analysis shows that the specific examples are directed to a wide variety of starting materials and final product which would not lead one of ordinary skill in the art to envisage either a starting material of 1,3-butadiene or a final product of cis-2-butene. In the examples there is one mention of a butene, namely butene-1 in Example VII wherein a butyne-1 feed was converted to butene-1 and n-butane. In Examples V and VIII 1,3-pentadiene was used as a starting olefin, but the resultant product was primarily pentane. Consequently, in view of the discursive nature of the numerous examples one of ordinary skill in the art could not envisage 1,3-butadiene in particular from the great number of possibilities which include both position and geometrical isomers, much less the production of primarily cis-2-butene. Consequently, the rejection based on anticipation under 35 U.S.C. 102(b) should be withdrawn.

As to the possibility of reformulating the rejection under 35 U.S.C. 103, the disclosure of Yoo provides a prejudice against utilizing appellant's liquid catalyst composition . Referring to the Yoo disclosure, column 1, lines 13 and 14 specify the utilization of "inorganic oxide support" which is also specified in claim 1 of the catalyst. Moreover, on column 14, lines 14-20 and column 17, lines 24-26, the Yoo patent unequivocally states that the supported catalyst is more active than the unsupported catalyst. In addition, it is not seen that either Example VIII or Example X employs a catalyst containing a ligand as required in appellants' claim. Referring to appellants' specification on pages 14 and 15, it is clear that appellant's catalyst comprising a ligand provides highly superior results than catalysts without ligands. Furthermore, Table 4 on page 15 of appellants' specification and the discussion on line 14 19 make it clear that a heterogeneous catalyst, which is indicated in the Yoo patent to be of high importance, yields

both a low activity and a very low selectivity for cis-2-butene. Consequently, it is respectfully submitted that the prejudicial aspect of the Yoo reference in demonstrating the relative ineffectiveness of liquid catalyst compositions versus heterogeneous catalysts along with appellant's data which demonstrates that for purposes for reacting 1,3-butadiene to cis-2-butene, the use of a liquid catalyst is unexpectedly superior, provides both evidentiary and legal support for the allowability of claim 1 and those claims dependent thereon, both with respect to novelty and unobviousness. If it is agreed that claim 1 is both novel and unobvious, it necessarily follows that the dependent claims are also patentable. For the sake of completeness, attention will now be directed to claims 10, 11, 15-16 and 17-23 which are rejected under 35 U.S.C. 103.

With respect to the rationale on page 5 of the Office Action, second complete paragraph, it is respectfully submitted that it is a clear error to take the position that it would be obvious to select any combination of the three disclosed metals since catalysis is unpredictable and it would make no sense to one of ordinary skill in the art to use a combination of metals if only one metal were sufficient to yield the desired results.

With respect to the third paragraph on page 5 of the final rejection, attention is invited to page 16 of appellants' specification, TABLE 5, and the following lines 10-12. It is not only that appellants can obtain a reduced level of 1,3-butadiene of less than 10 ppm by weight, but also that the 1-butene molecule is not converted into either cis or trans 2-butene by isomerization or n-butane after hydrogenation. Consequently, in the absence of appellants' disclosure, one of ordinary skill in the art would have been prejudiced against utilizing appellants' catalyst in order to produce 1-butene from a 1-butene rich C_4 cut.

Referring to the rejection of claims 13-16, under 35 U.S.C. 103(a), this constitutes clear error inasmuch as Yoo, as discussed above teaches that the use of a liquid catalyst composition is less active than a heterogeneous catalyst. Furthermore, it is clear error for the examiner to state that it would be obvious to employ an ionic solvent (even if there were no prejudice against using a solvent) because the reaction products can be advantageously separated by simple settling out of the polar catalytic stage containing the molten salt in the major portion of the catalyst. (On intimation and belief, in a system wherein settling is utilized, the interface between the phases is generally not 100 percent clean, thereby requiring a purification eventually of one

phase or the other.) Since in heterogeneous catalysis, the reaction products can be separated from the catalyst by simple filtering, it is not seen that there is any factual basis to hold that it would be obvious for one of ordinary skill to take part of one catalyst system, that of Mussmann et al., and use it in another catalyst system where there is no apparent reason to do so.

In the final analysis, the prior art is crowded on the one hand and there is no suggestion of the unexpected results achievable by appellants' process – the ability of converting 1,3-butadiene to primarily cis-2-butene. Accordingly, it is respectfully submitted that the facts and the law support appellants' position that the claimed invention is both novel and unobvious over the teachings of the prior art.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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Attorney Docket No.: PET-2170

Date: April 13, 2009